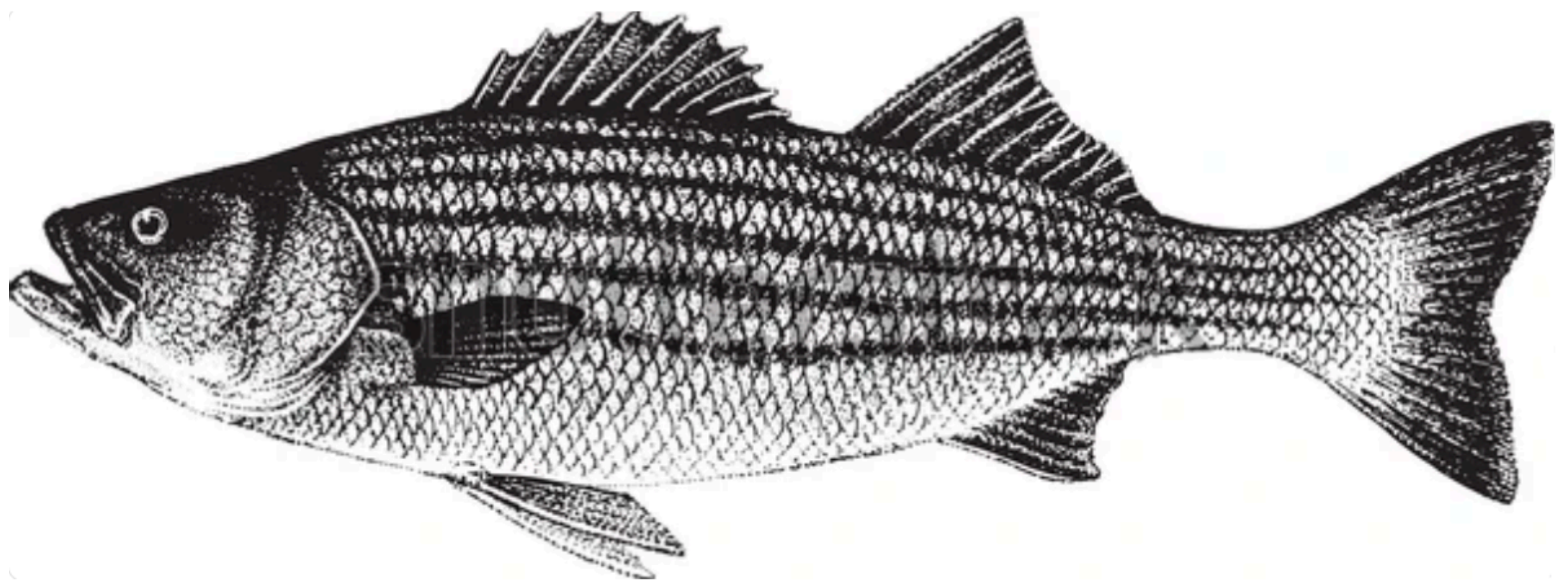
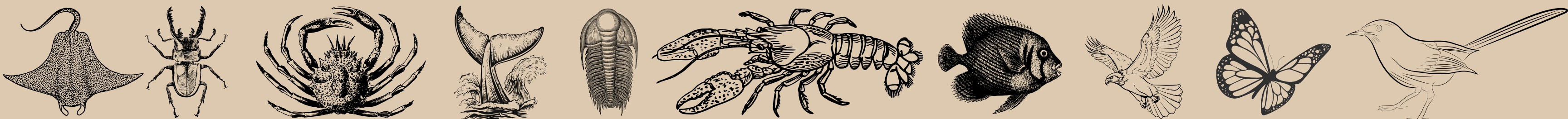


Children's School of Science

Woods Hole, Massachusetts



Summer Program 2025



OVERVIEW

COURSES, SCHEDULE, & REGISTRATION

Courses are organized into two three-week sessions. Session A runs from June 30 to July 18, and Session B runs from July 21 to August 7. Classes meet daily, Monday through Friday, for an hour and 45 minutes. Attendance at every class is expected. Courses are organized according to students' interests and age-appropriate study. To register, a student must be 7 years old when the class begins. In addition to Seashore Life, CSS is offering a new course for 7-year-olds, Patterns in Nature.



Registration for 2025:

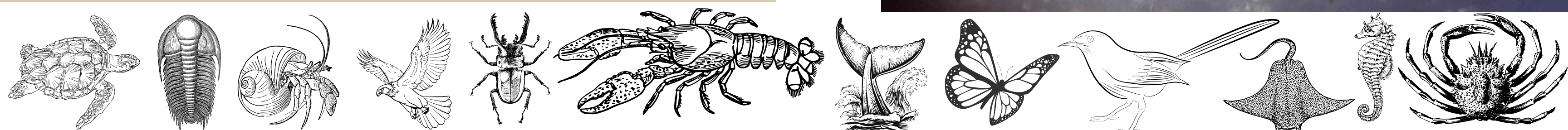
Initial registration will begin during the third week of February. During this period, students may sign up for only one class per session (one class for Session A and one class for Session B). This ensures that more families have the opportunity to place their child in a class. Towards the end of February, registration will reopen, and students may enroll in additional classes if space is available. Please note that students under 10 are discouraged from enrolling in more than one class per session.

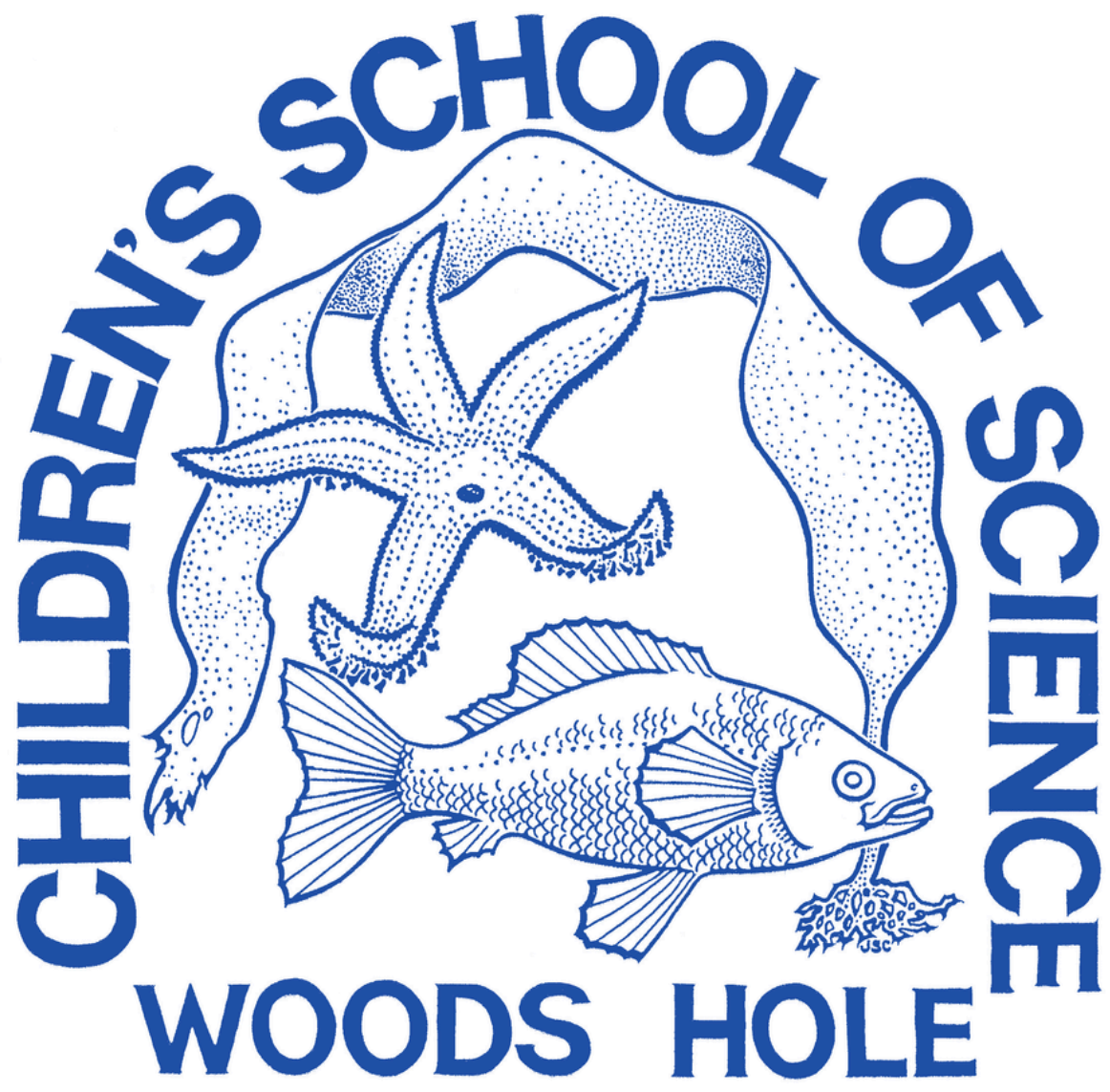
Tuition Refunds:

Tuition may be refunded in full, less the \$40 registration fee, through March 1; from March 1 to April 1, up to 50%; and from April 1 to May 1, up to 25% of the tuition amount.

Scholarships:

Need-based scholarships are well-funded and available to families for whom CSS tuition would be a financial burden. Please send a written request for financial aid to scholarships@childrensschoolofscience.org.





The Children's School of Science (CSS) provides enriching experiential learning opportunities through field trips, observations, artwork, experiments, setting up aquaria and terraria, constructing devices to use in science activities, and much more.

Teachers, in collaboration with the CSS team, bring diverse perspectives to the classroom through engaging content. Our field trips include daily walks and weekly drives to sites that are too far for walking. Field work activities include developing observational skills, surveying animal and plant populations, collecting data, carefully collecting organisms, and developing respect for organisms and diverse habitats.

o

Tuition

\$440

3 week course

Our Program

2

Sessions

35+

Classes

15+

Educators

Mark Your Calendars

2025 Calendar



Dr. Kate Schafer, Director
kate@childrenschoolofscience.org



Register by visiting
childrenschoolofscience.org website

- June 30** – Session A Begins
- July 1** – Back to School Night, 6-7pm
- July 4** – No School
- July 16** – Open Board Meeting, 7 pm
- July 17** – Annual Picnic, 5 pm
- July 18** – End of Session A
- July 21** – Session B Begins
- July 22** – Back to School Night, 6-7 pm
- August 4** – Annual Meeting, 7:30 pm
- August 7** – End of Session B

2025 COURSE SCHEDULE

Session A
June 30 – July 18

Session B
July 21 – August 7

8:30 – 10:15

Seashore Life (7-8)
Animal Behavior (8-9)
Seaweeds (10-11)
Ornithology (11-12)
Ichthyology (12-13)

Seashore Life (7-8)
Animal Behavior (8-9)
Gulf Stream Orphans (10-11)
Meteorology (11-12)
Ichthyology (12-13)

10:30 – 12:15

Seashore Life (7-8)
Marine Biology (9-10)
Invertebrate Zoology (10-11)
Introduction to Film Photography (12-13)
Robotics/ROVs (13-15)

Patterns in Nature (7-8)
Marine Biology (9-10)
Whales, Seals, and Sea Turtles (10-11)
Field Geology (11-12)
Film Photography (12-13)

12:30 – 2:15

Marine Biology (9-10)
Art, Science, and Nature (10-11)
Embryology (12-13)
Earth Science (13-16)
Advanced Marine Biology (14-16)

Woods, Ponds, and Fields (8-9)
Marine Biology (9-10)
Entomology (11-12)
Nautical Science (12-13)
Advanced Marine Biology (14-16)

2:30 – 4:15

Woods, Ponds, & Fields (8-9)
Marine Ecology (9-10)
Oceanography (12-13)
Biological Illustration (14-16)

Habits & Habitats (8-9)
Herpetology (10-11)
Botany (11-12)
Robotics/ROVs (13-15)



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



SEASHORE LIFE (7-8) A, B

Students will explore local beaches and salt marshes to observe and learn about marine life and coastal processes. Activities will include the study of seashore communities, learning to identify common invertebrate phyla, collecting organisms in intertidal environments, setting up classroom aquaria, conducting experiments, and completing art projects.

PATTERNS IN NATURE - Polka Dots, Spirals, Stripes, and More! (7-8) B

Where can we find patterns in nature? Everywhere! We'll look at symmetry, spirals, branching, waves, tessellations, polka dots, and stripes. We'll explore nature to find patterns in fields, woods, ponds, backyards, and at the beach. We'll collect objects from nature and have fun with art projects that will help us understand patterns and answer questions like: Why are beehives full of hexagons? How does it help a Killifish to have stripes? Why are some baby animals covered in spots?



WOODS, PONDS, AND FIELDS (8-9) A, B

Students will learn about the natural history of animals and plants that live in terrestrial and freshwater environments. Through explorations in the field, creative projects, collections, and by setting up terraria and aquaria in the classroom, the students will be introduced to concepts of entomology, botany, ornithology, herpetology, limnology, and ecology.



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



ANIMAL BEHAVIOR (8-9) A, B

Animals are born with instincts. They already know how to do certain things, like build nests, find food, and avoid predators. Animals can also learn to do new things. Herring Gulls learn to drop clams to crack them open by watching other gulls do it. Mice can learn their way through a maze. In this class, we will observe animals to learn about what they do and why they do it, and we will set up some experiments to demonstrate animals' behaviors.

HABITS AND HABITATS (8-9) B

A habitat is a natural ecosystem where an animal or plant lives and where it has what it needs to survive. In this course, we will explore a variety of environments and learn about species adaptations to live there. What are the characteristics of different habitats? How does an animal's habitat determine its behaviors and how it survives? We'll make observations in fields, woods, backyards, freshwater ponds, and marine environments, and compare the animals and plants that live in each. We will carefully collect organisms to set up aquaria and terraria in the classroom so we can learn about them up close.



MARINE ECOLOGY (9-10) A

In marine ecology, we will study how marine organisms interact with each other and their environment. By exploring sandy beaches, rocky intertidal areas, salt marshes, and communities of plants and animals growing on dock pilings, we can learn how different organisms are adapted to living in particular environments. We will set up aquaria to represent different habitats and carefully collect some organisms to observe in the classroom.



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



MARINE BIOLOGY (9-10) A, B

This is a diverse, field-oriented course in which students will visit rocky shores, sandy beaches, and marsh ecosystems to explore and observe the organisms that live there. The students will collect animals and plants to learn to identify them and learn about how they live. In the classroom, students will keep aquariums for a better look at the animals they find. Microscopes and dissections will be used for close study.

SEaweEDS (10-11) A

Did you know that we most likely consume some form of seaweed every day without even knowing it? Over the course of three weeks, students will immerse themselves in hands-on activities that cover such topics as algae form and function, growth and light, photosynthesis and respiration, eutrophication and pollution, ocean acidification, and aquaculture. Students will learn how to identify local species using identification guides, examine ecological interactions between seaweeds and their surroundings, press seaweeds, eat seaweeds, and design a kelp farm in a fish tank.



ART, SCIENCE, AND NATURE (10-11) A

This course blends science, nature, and the visual arts. Students will use various materials to create forms of art while learning about ecological relationships between organisms and local natural environments. Students will explore different habitats along the seashore, in the woods, in freshwater wetlands, and in the suburban backyards of Woods Hole. Through sketches, sculptures, and other projects, students will showcase the connections among animals, plants, and their environments, as well as our interactions with them.



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



HERPETOLOGY (10-11) B

Herpetology is the study of reptiles and amphibians. Both are cold-blooded animals with backbones (vertebrates). Reptiles have scales and they hatch from eggs that are laid on land or carried in the mother's body. Amphibians have smooth skin and their tadpoles hatch in freshwater. In this class, we'll learn to identify local species that can be easily found and seen, like frogs, toads, salamanders, snakes, and turtles. We will learn about the habitats in which they are found and each animal's development, anatomy, form, function, evolution, adaptations, and feeding strategies.

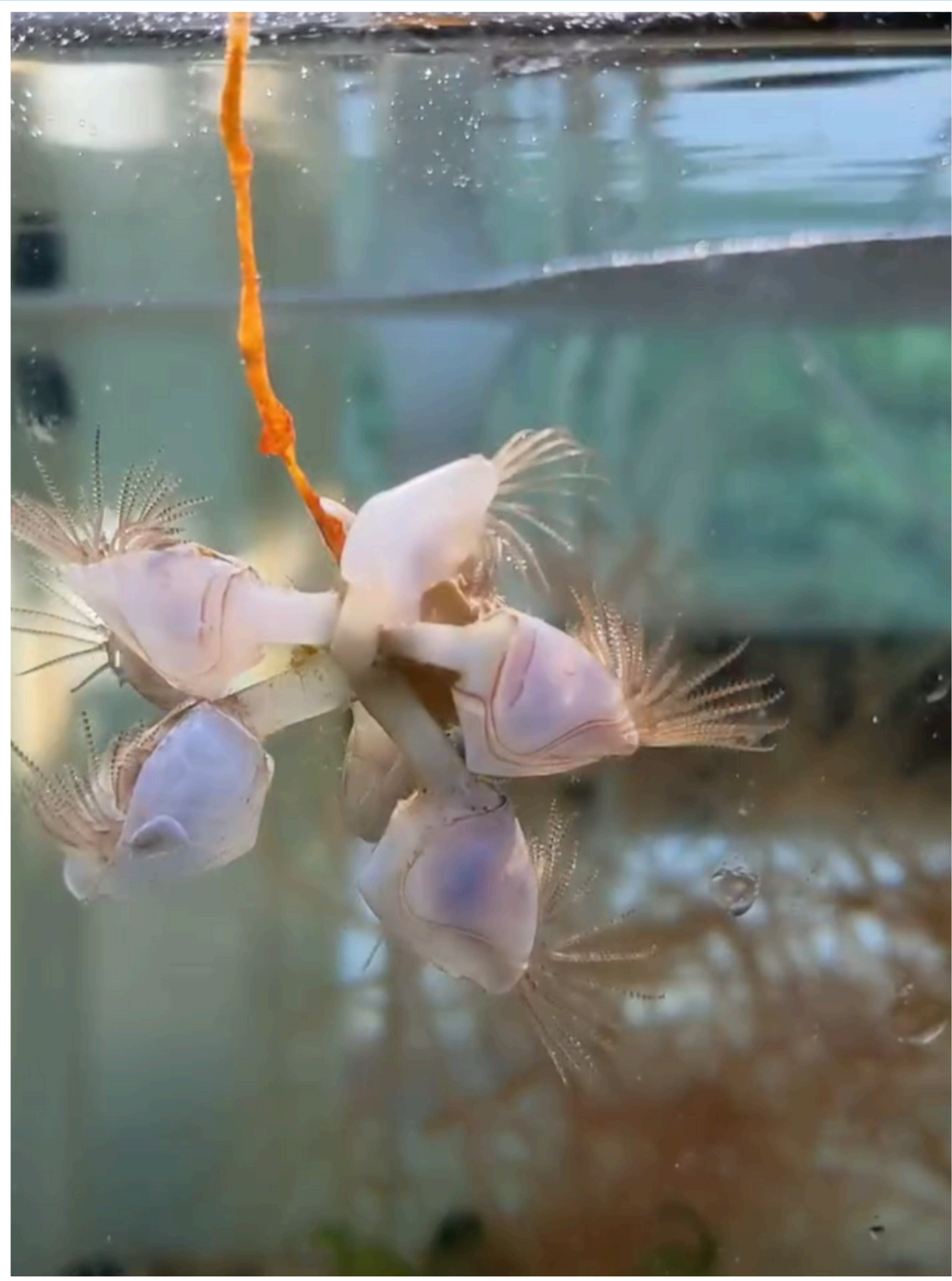
GULF STREAM ORPHANS (10-11) B

Gulf Stream Orphans are what we call the tropical fish that are swept north beyond their native range by the Gulf Stream in the summer. In this class, we will learn about the relationship between the Gulf Stream, climate, water temperatures, and the distribution of marine species. We'll do a lot of collecting at local docks, beaches, and salt marshes to look for GSOs as well as other non-native animals and plants that arrived here from around the world. We'll learn about how they got here and what effects they have on local environments and on native species. We'll keep a record of the GSOs we find and submit our data to the GSO Project. www.gsoproject.org



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



INVERTEBRATE ZOOLOGY (10-11) A

Invertebrates are animals without backbones. They make up 94% of the world's animal species. They include diverse organisms such as sponges, ctenophores, worms, echinoderms, mollusks, and arthropods. The largest invertebrates are giant squids that can grow to 40 feet and weigh 1,000 pounds. The smallest invertebrates are so tiny that we will need to use microscopes to see them. This hands-on class will survey the diversity of invertebrate phyla and explore the evolutionary relationships between these groups. Field trips to beaches, ponds, fields, woods, and backyards will give the class the chance to collect animals to bring back to the classroom where aquaria and terraria will be set up for close study and observations of anatomy, reproduction, feeding, and behavior.

CETACEANS (Whales), PINNIPEDS (Seals), AND SEA TURTLES (10-11) B

Students will learn to identify the marine mammal and sea turtle species most common to our waters. Whales, dolphins, porpoises, seals, and sea turtles can be found all around Cape Cod. Some can be easily seen from shore, even in Woods Hole. We'll look at their adaptations for life in the ocean. We'll learn about the many threats these animals face from ocean debris—like fishing line, nets, rope, and plastic bags—and about the great dangers posed by ship strikes and boat propeller injuries. Local biologists who work in the field of marine animal rescue and rehabilitation will visit us in the classroom, and we will have the chance to visit animals in rehab facilities.



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)

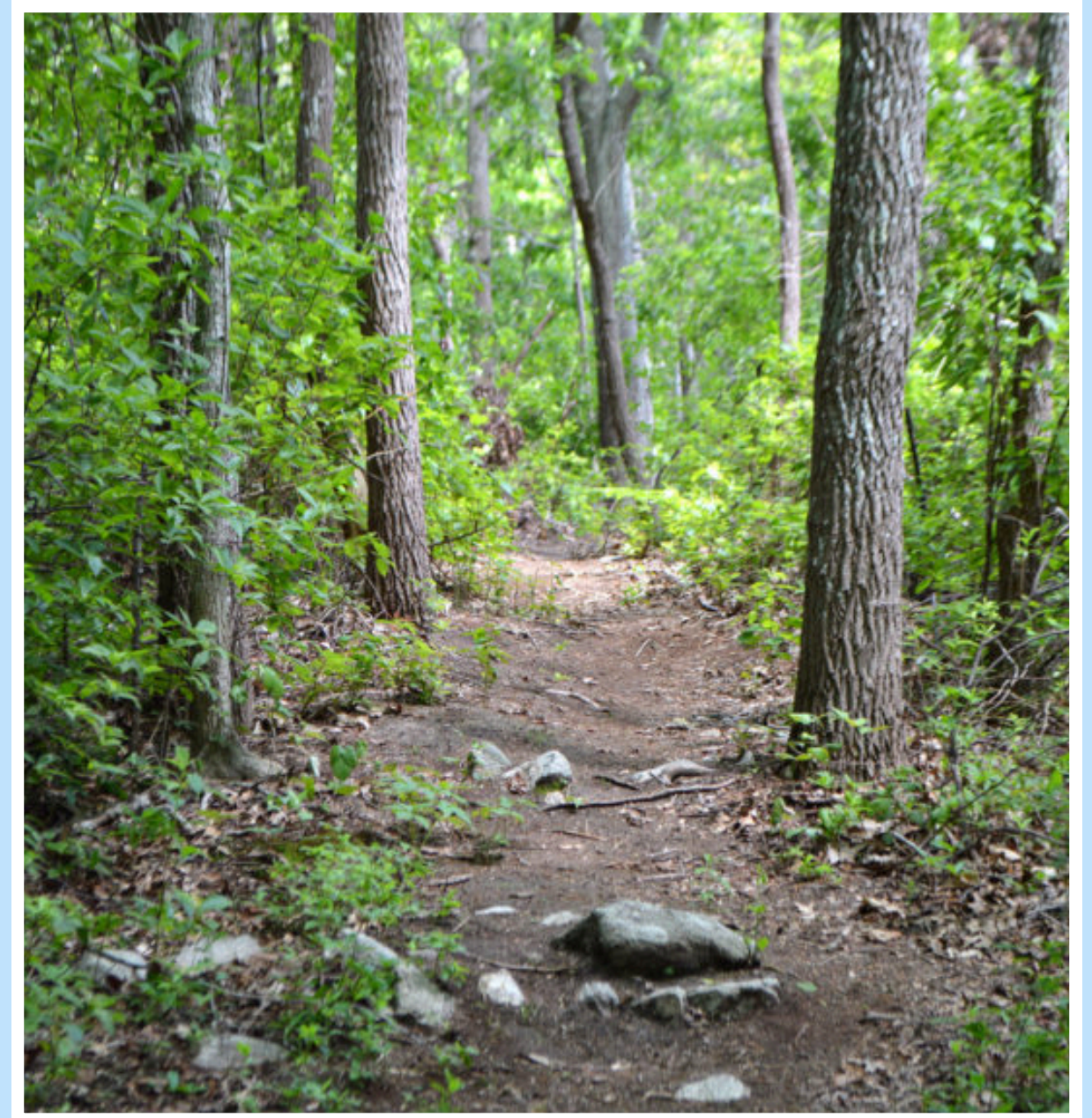


ORNITHOLOGY (11-12) A

Fascinating bird facts: Birds are dinosaurs. Birds' bones are hollow. Blue Jay feathers aren't really blue. This course is designed to give students a basic understanding of bird biology as well as the ability to identify local birds by field marks, voice, and song. Students will learn life histories, comparative morphology and coloration, and behavior. Activities will include field exploration and observation of nest sites, using paper airplanes to demonstrate how wing shapes affect bird flight, and making quill pens.

FIELD GEOLOGY (11-12) B

Did you know that Cape Cod and the Islands were formed by a huge ice sheet over ten thousand years ago? Students will be introduced to the geological history of Cape Cod through field work, experiments, and classroom modeling. The class will visit and observe landforms that the glaciers left behind when they retreated. Field trips will take us to see cliffs, outwash plains, moraines, knob-and-kettle terrain, and kettle holes, and learn about the processes that formed them. Please be aware that there may be additional field trips or slightly longer trips to visit landforms that are beyond what we can see right in Woods Hole.



METEOROLOGY (11-12) B

Weather is easy to study because it's around us every day and is always changing. What is weather, what causes it, and how can we predict it? Solar energy input, temperature differences, and pressure variations in the atmosphere drive the weather. Students will learn about the components of weather, and they will use and construct instruments that will demonstrate concepts and collect data on temperature, atmospheric pressure, wind speed and direction, humidity, precipitation, and cloud cover. Students will become adept at identifying cloud types and recording data, looking for patterns in changing weather conditions—and maybe even predicting what tomorrow's weather will be without consulting the internet!



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



BOTANY (11-12) B

Fun plant facts: Bamboo is the fastest growing plant in the world and is a kind of grass. Some vegetables are actually fruits. Plants sense gravity and know what time it is. Plants provide the foundation for all life on earth. Students in this class will collect and identify plant species and learn about their importance in ecosystems. Through experiments, microscopy, dissection, and field work, students will develop a hands-on appreciation for botanical concepts and the dynamic role that plants play in the world around us.

ENTOMOLOGY (11-12) B

Students will learn about the major groups of insects: their habits, growth and development, and the important roles they play in terrestrial and aquatic ecosystems. Many of our activities will involve collecting insects in fields, woods, ponds, and backyards, and rearing them in the classroom. We will pay special attention to important relationships between insects and plants.



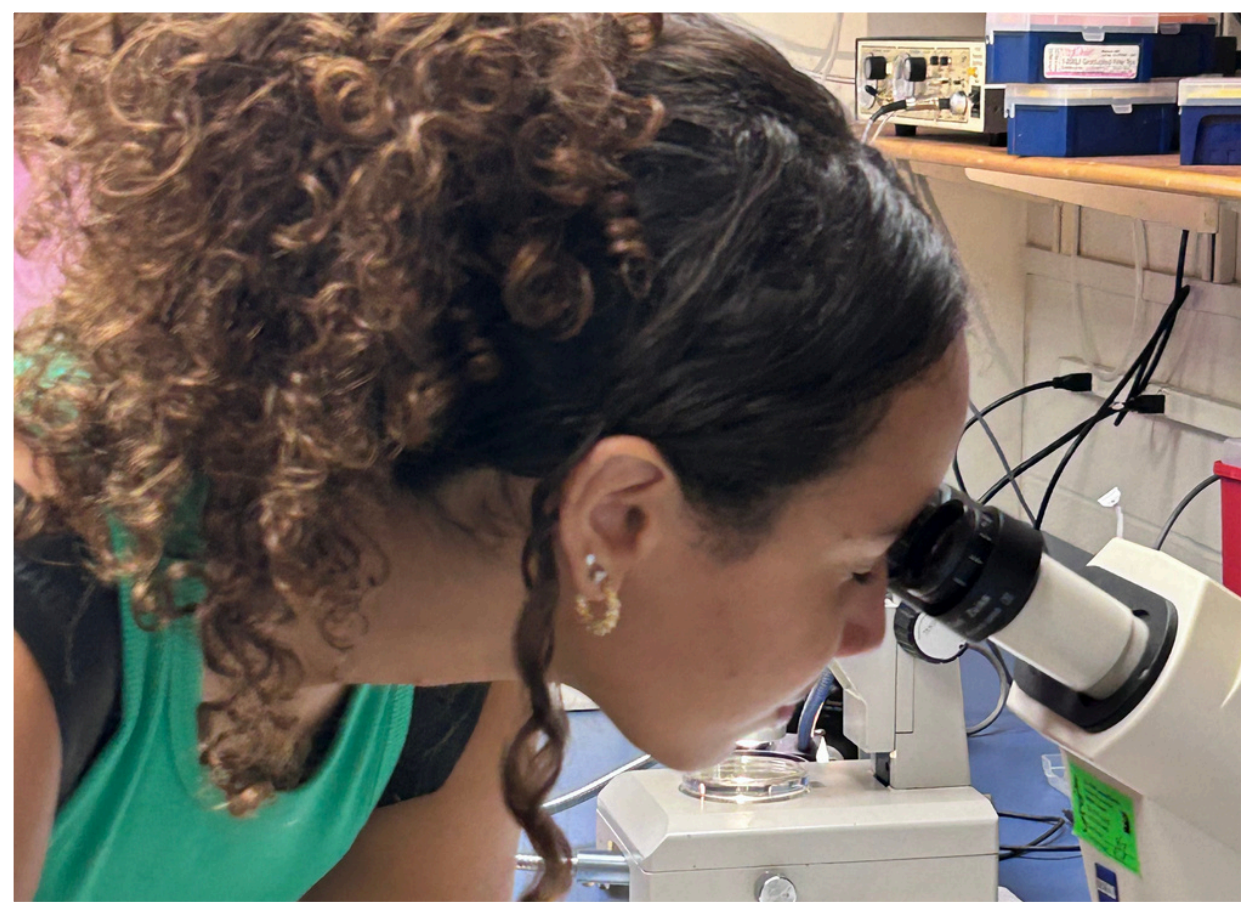
OCEANOGRAPHY (12-13) A

Students will learn about the physical and chemical properties of seawater and take measurements of salinity, temperature, and pH. We'll learn about ocean zonation, beach profiles, wave formation, and how ocean currents are affected by the earth's rotation. We'll collect data on tidal currents and tides and learn how they are caused by the interaction of Earth, the sun, and the moon. Students will investigate how changes in ocean chemistry, whether due to natural processes (such as biological activity or geology) or caused by human activities (such as pollution), may impact both marine and terrestrial life.



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



EMBRYOLOGY (12-13) A

During development, a single cell will divide and produce many different cell types with different shapes and jobs. How does this happen? How long does it take? This course will introduce and explore the changes and stages of embryonic development in organisms through collection and microscopic research. We'll look at embryonic development in vertebrates and invertebrates.

NAUTICAL SCIENCE (12-13) B

Students will explore boat design and build a seaworthy model boat, learn to navigate by chart and compass, experiment with the principles of buoyancy and displacement, and delve into nautical terminology and practical seamanship. Classes will take trips to the working waterfront and by boat through Woods Hole Passage.



ICHTHYOLOGY (12-13) A, B

Students will learn to fish using different baits and lures, as well as by setting traps and using seines. They'll study the characteristics of fish species that are found in local North Atlantic and freshwater habitats, and learn about fish anatomy and the adaptations they have developed for life and survival in aquatic environments.



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



INTRODUCTION TO FILM PHOTOGRAPHY (12-13) A, B

Students will learn the science behind photography and how to use a 35-mm SLR film camera. The class will learn to develop film and use enlargers in the darkroom to enlarge and print photographic images. They'll learn about the chemical reactions that take place when film and photo paper are exposed to light, and about how darkroom chemicals like developer, stop bath, and fixer work. Students will explore how to artistically capture nature through a lens. CSS will provide each student with an SLR film camera to use for the class. Space is limited to 10 students. Materials Fee: \$40

ROBOTICS/ROVs (13-15) A, B

Students will focus on the technical, economic, and environmental aspects of real-world marine engineering and electronics. Through project design and data analysis, students will explore principles such as buoyancy, propulsion, and energy. There will be frequent field trips to Woods Hole labs to observe and learn about real-world ROVs (remotely operated vehicles). Students will build and test functional underwater ROVs. Materials Fee: \$40



EARTH SCIENCE (13-16) A

The planet Earth is 4.6 billion years old. Earth science is geology, meteorology, climatology, oceanography, and environmental science. Also called geoscience, earth science studies the processes that form and shape Earth's surface, and how water and ecosystems are interconnected. We'll learn about earthquakes and volcanoes and go out into the field to learn firsthand about minerals, soils, oceans, freshwater, fossils, atmosphere, weather, and hydrology.



2025 Course Descriptions

LETTERS INDICATE THE SESSION(S)



BIOLOGICAL ILLUSTRATION (14-16) A

Illustration can be a useful and beautiful method of recording information. In this class, we will become familiar with basic techniques of biological illustration, while examining the structure, anatomy, and function of local organisms. This course will also compare historically important methods of illustration with modern techniques such as photomicrographs and data-based animations.

ADVANCED MARINE BIOLOGY (14-16) A, B

Through hands-on experience, students will delve into the biology and ecology of marine vertebrates and invertebrates, their evolution and classification, anatomy and physiology, behaviors, and habitats. This course will include snorkeling field trips to explore different marine ecosystems around Woods Hole. Students must provide their own mask, snorkel, and fins. A swim test will be administered requiring students to swim 50 ft and tread water for 2 minutes. Space is limited to 14 students.



Philosophy, Background, & Donors

Rooted in the philosophy of experiential learning, the commitment to direct observation of nature remains steadfast. Since its inception under the guidance of Frances C. Lillie and Dr. Lillian V. Morgan, the teaching staff, then as now, have been selected for their scientific competence and teaching expertise. They are free to organize the details of the courses according to their particular skills and the interests of the students. As a result, the instruction is at a higher level than is usually possible for children of these ages.

Founded in 1913 on Penzance Point, the school began as the Summer School Club. At first the school had a mixed curriculum of dancing, singing and some science. By 1919 it had evolved into a cooperative school with a focus on nature and biological science. Housed in the Woods Hole School building (c. 1870), the Children's School of Science offered a variety of children's activities, later emphasizing structured science courses led by Dr. Morgan. Except for a 1916 hiatus and the summer 2020 virtual program, CSS has operated every summer since, becoming a nonprofit in 1952. Guided and funded by parents and friends, CSS maintains affordable tuition, embodying a century-long commitment to science education for children in Woods Hole.

CSS gratefully acknowledges all contributions from its many generous friends and families over the years. CSS also gives special thanks for recent support from Church of the Messiah of Woods Hole, The Clowes Fund, The Friendship Fund, Marine Biological Laboratory, Memorial Funds in Honor of Past Presidents and Friends of CSS, NOAA Fisheries Service, Woods Hole Foundation, Penikese Island School, Woods Hole Historical Museum, Woods Hole Oceanographic Institution, Woods Hole Public Library, and Woods Hole Woman's Club. Finally, we are deeply appreciative of Teaching Assistants Chair, Josh Olins; Ways and Means Committee Chairs, Emily Yang and Gail Diamond; Abigail McIntyre and Lauren Dunleavy; and all of our other invaluable parent volunteers.



Meet Our Team!



DIRECTOR

Kate Schafer's lifelong love of the oceans and marine life was sparked in Woods Hole as a student in Bettina Dudley's Advanced Marine Biology at CSS. A few years later, she attended Stanford University, where she graduated with a Bachelor of Science in Biology. While living in Jamaica after graduation, she became fascinated with the incredible diversity of life on coral reefs, so she returned to California to earn her Ph.D. in integrative biology at UC Berkeley. Her dissertation research was largely spent in Belize, studying mantis shrimp and pygmy octopuses. While in Belize, she witnessed a coral bleaching event at her study sites. This experience and others have led her to commit to doing everything she can to stave off the climate crisis's worst impacts and advocate for sustainability at every level. Kate has taught high school biology and environmental science for 19 years, and now teaches at Sequoyah School in Pasadena. Her summers bring her to Woods Hole, for many years as a CSS instructor, and now as the school's Director, where she enjoys getting to share her love of science and nature with a new generation of students.



ASSISTANT DIRECTOR

Jessica Rencher returns to the CSS team every summer, bringing her passion for education from the Rocky Mountains. She teaches Early Childhood Education at Colorado State University, focusing on K-3 literacy, science, and math. Her career has spanned teaching first grade in Fort Collins, guiding zip-line tours in Santa Cruz, and advising international students in Switzerland. Teaching science in Woods Hole holds a special place in her heart, and she is grateful for the opportunity CSS gave her as a teacher in 2010. Jessica enjoys working with the students at the Children's School of Science, as well as collaborating with the dedicated teaching assistants to create a dynamic and engaging learning environment. Jessica holds a B.S. in Biology with an emphasis in teaching from California Polytechnic State University, an M.Ed. from Colorado State University, and is pursuing a doctorate in Human Resources and Education at CSU. Outside of work, she enjoys time with family and friends, playing the violin, traveling, reading, skiing, hiking Caminos in Spain, and spending time with her Siberian Husky.



CURRICULUM CHAIR

Becky Lash is often endearingly referred to as the 'keeper of the school.' She has been involved with the Children's School of Science almost every summer since 1963, when she was just a wee lass in Seashore Life. She is passionate about science education and creating engaging experiments! Becky's teaching career started at CSS in 1977, with some summers off here and there. Among her favorite classes to teach are Entomology and Ornithology. Before her extensive teaching career, Becky attended Penn and Cornell, where she earned her degrees. Recently, the CSS Board convinced her to join the leadership team. She plays an instrumental role in developing innovative courses while honoring the long-standing traditional CSS classes. Becky considers teaching in Falmouth Public Schools, being an aquarist at the Woods Hole Science Aquarium, and being a gardener three of her most enjoyable jobs. She is currently obsessed with being part of the New England Aquarium's sea turtle rescue and rehab team. Chat with Becky about sea turtles when you get the chance!



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Vice President: Christine Field

Treasurer: Ronnie Cooperstein

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Children's School of Science

WOODS HOLE, MASSACHUSETTS